09/749,693

Fig. 1

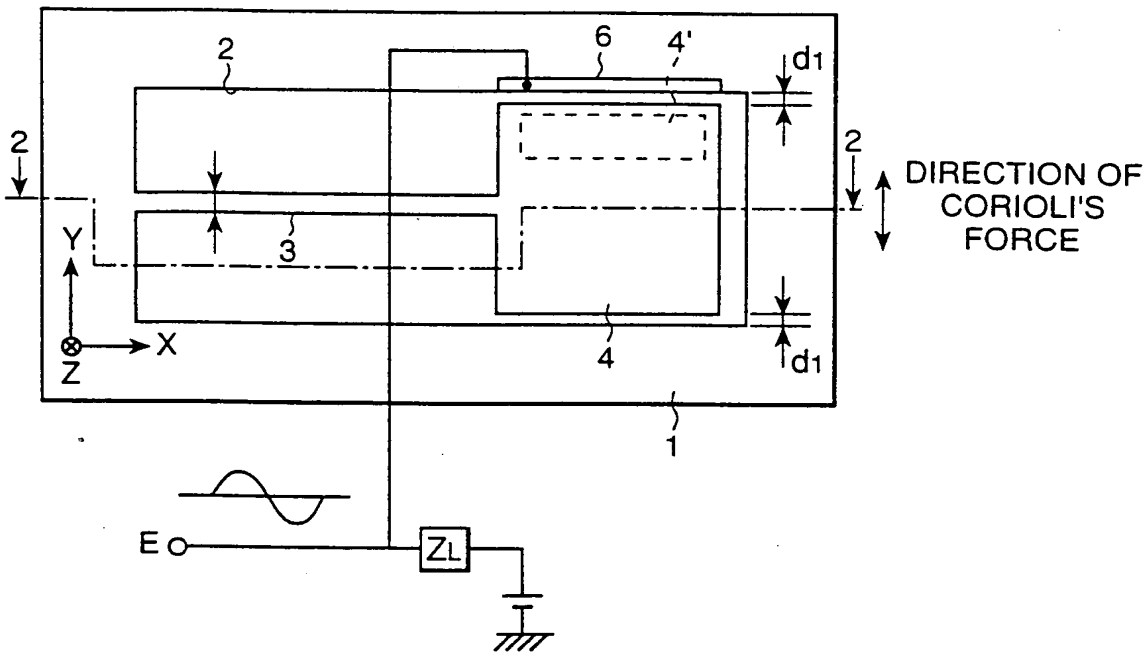


Fig. 2

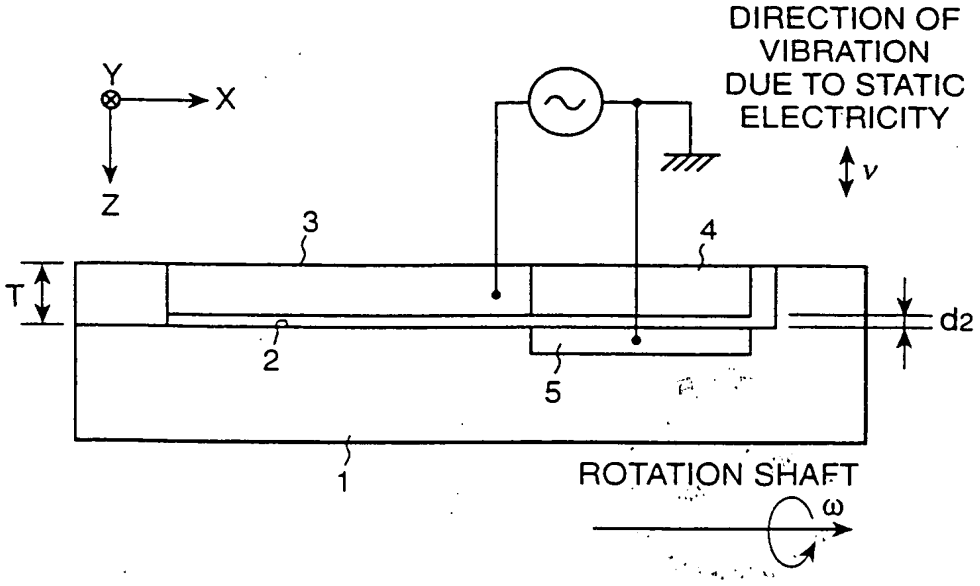


Fig. 3

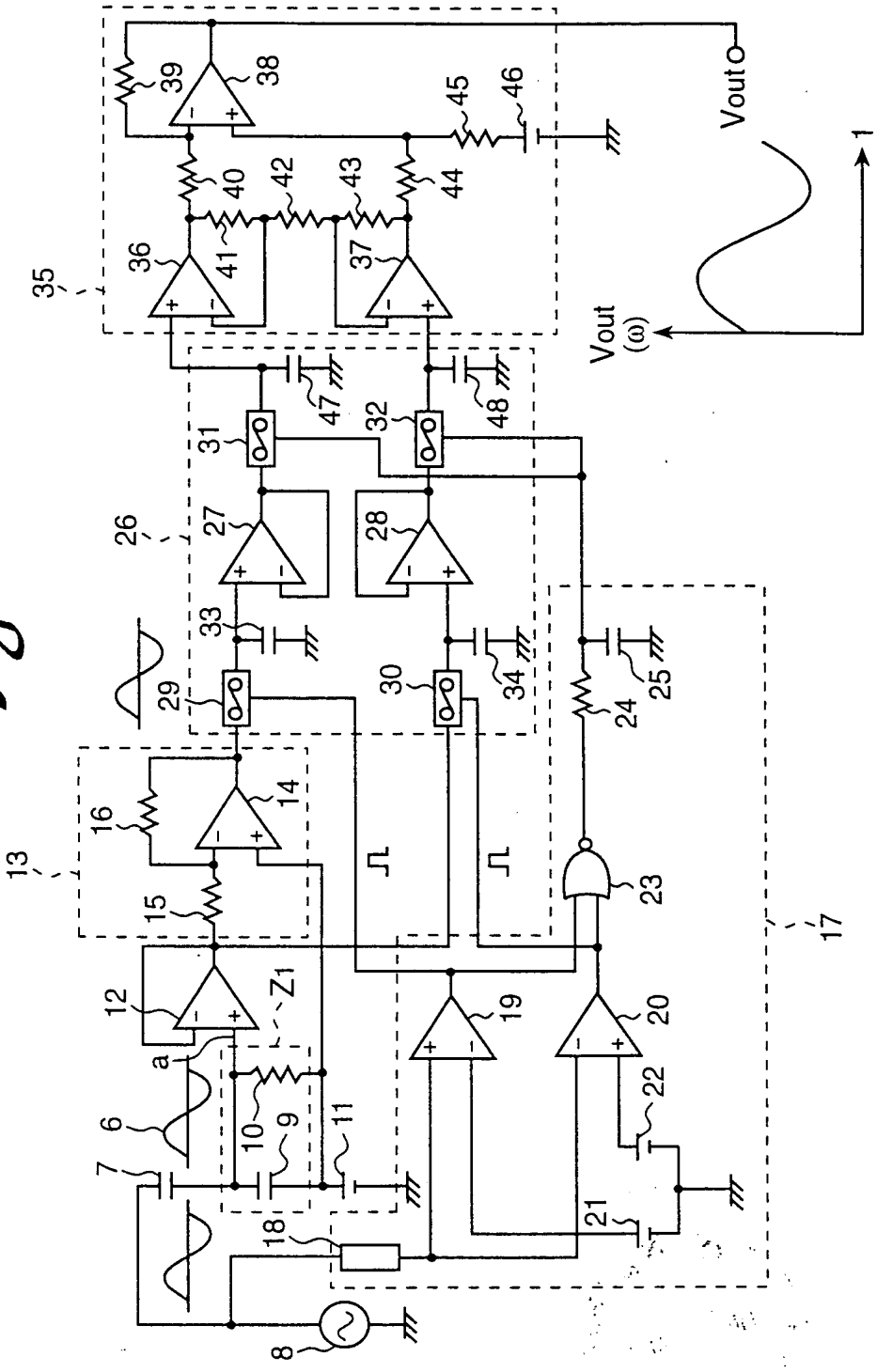

Vout
Vout (ω)
1
35
36
37
38
39
40
41
42
43
44
45
46
47
48
31
32
26
27
28
33
34
29
30
24
25
13
14
16
15
23
17
12
Z1
19
20
22
a
6
7
10
9
11
21
18
8

Fig. 4

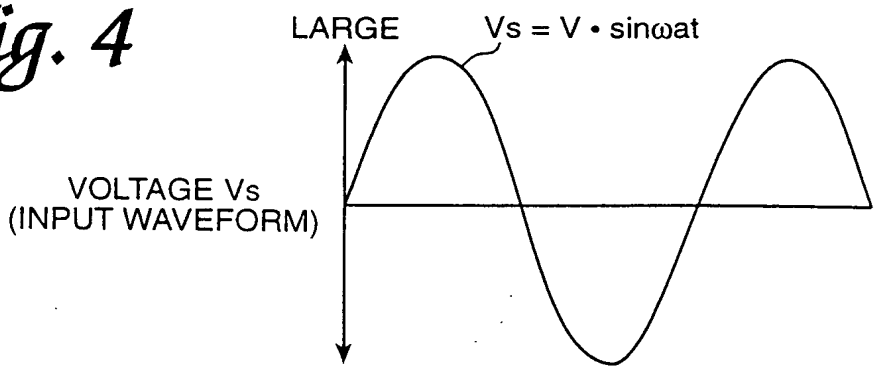


Fig. 5

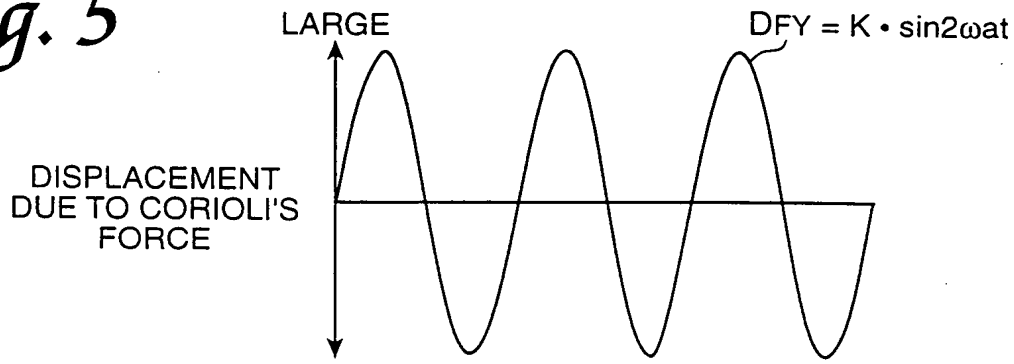


Fig. 6

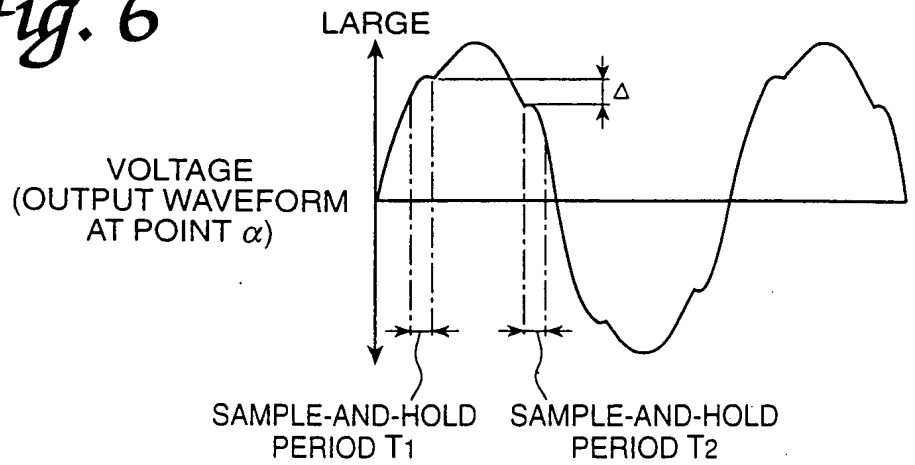


Fig. 7

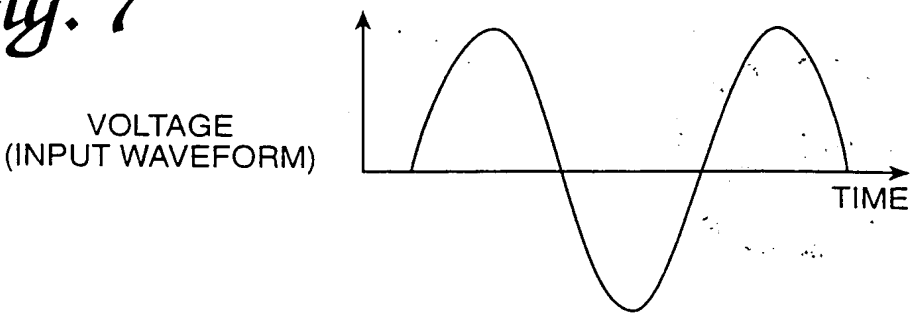


Fig. 8

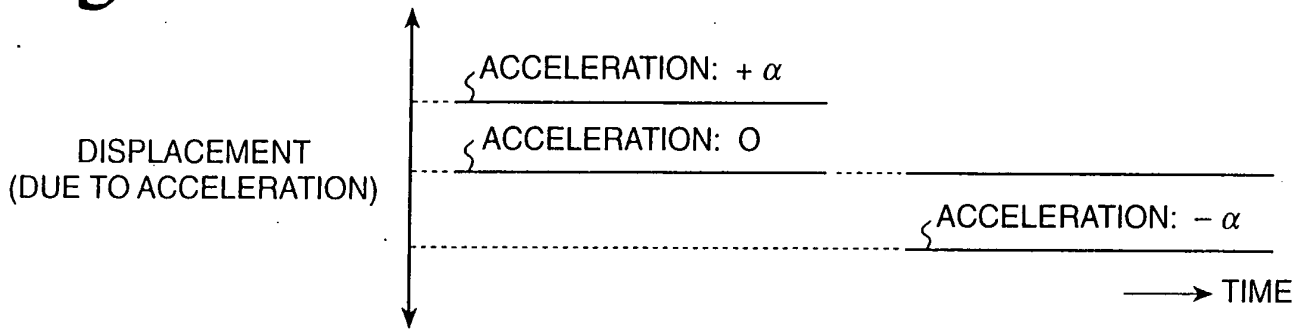

DISPLACEMENT
(DUE TO ACCELERATION)
ACCELERATION: + α
ACCELERATION: O
ACCELERATION: − α
TIME

Fig. 9

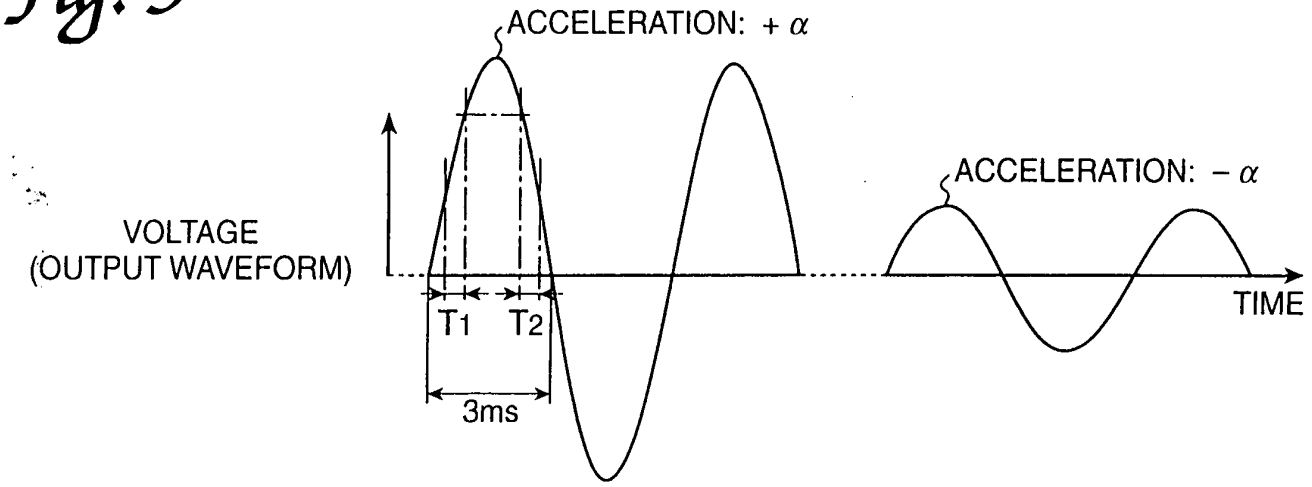

VOLTAGE
(OUTPUT WAVEFORM)
ACCELERATION: + α
ACCELERATION: − α
T1
T2
3ms
TIME

Fig. 10

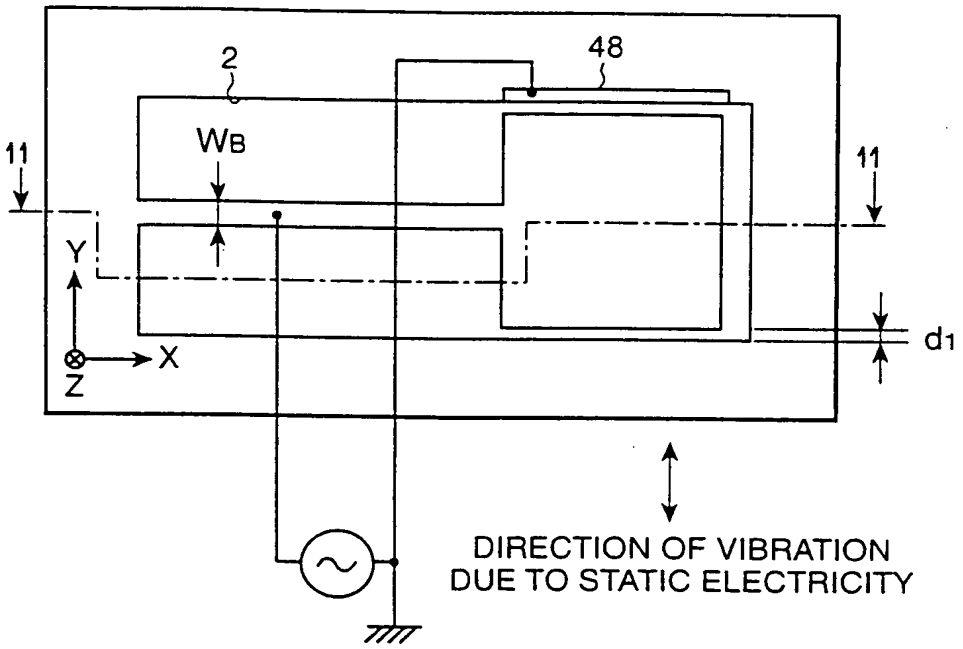

2
48
11
WB
11
Y
X
Z
d1
DIRECTION OF VIBRATION
DUE TO STATIC ELECTRICITY

Fig. 11

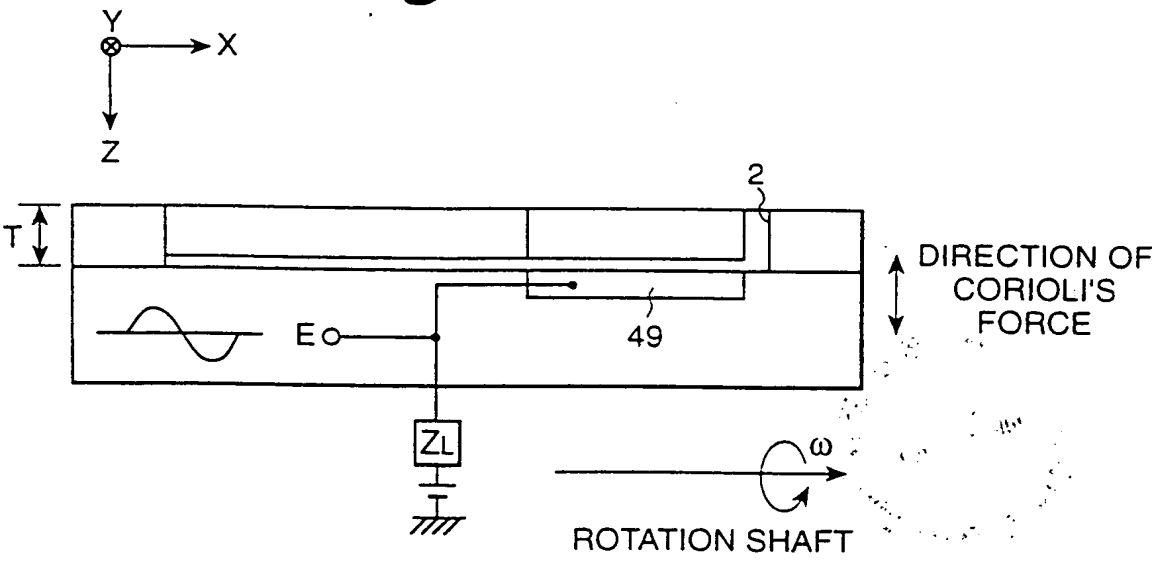

Y
X
Z
2
T
E
49
DIRECTION OF
CORIOLI'S
FORCE
ZL
ω
ROTATION SHAFT

Fig. 12

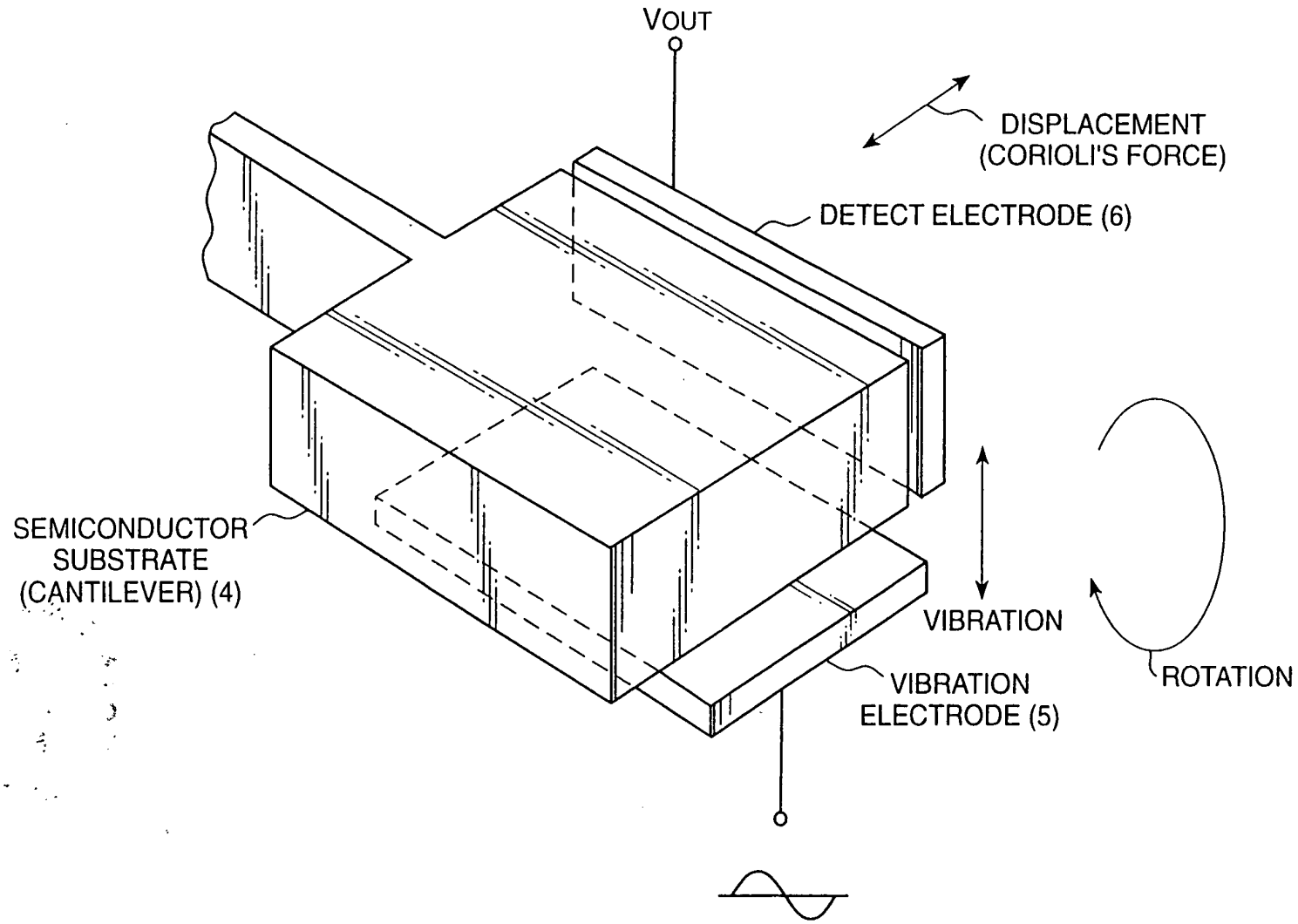

VOUT
DISPLACEMENT
(CORIOLI'S FORCE)
DETECT ELECTRODE (6)
SEMICONDUCTOR
SUBSTRATE
(CANTILEVER) (4)
VIBRATION
ROTATION
VIBRATION
ELECTRODE (5)

Fig. 13

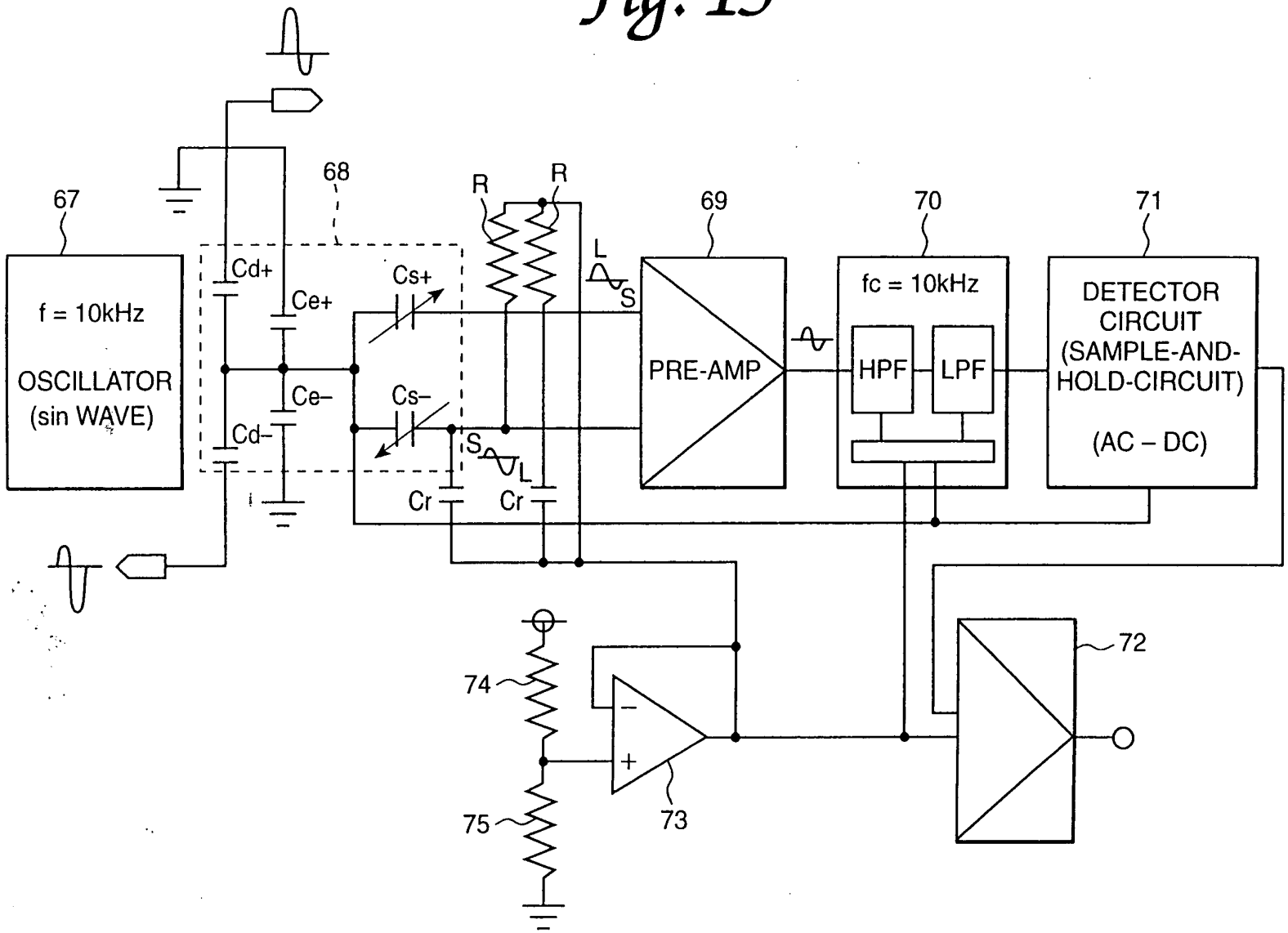

67
68
69
70
71
f = 10kHz
OSCILLATOR
(sin WAVE)
Cd+
Ce+
Ce–
Cd–
Cs+
Cs–
R
R
L
S
S
L
Cr
Cr
PRE-AMP
fc = 10kHz
HPF
LPF
DETECTOR
CIRCUIT
(SAMPLE-AND-
HOLD-CIRCUIT)
(AC – DC)
72
74
75
73

Fig. 14

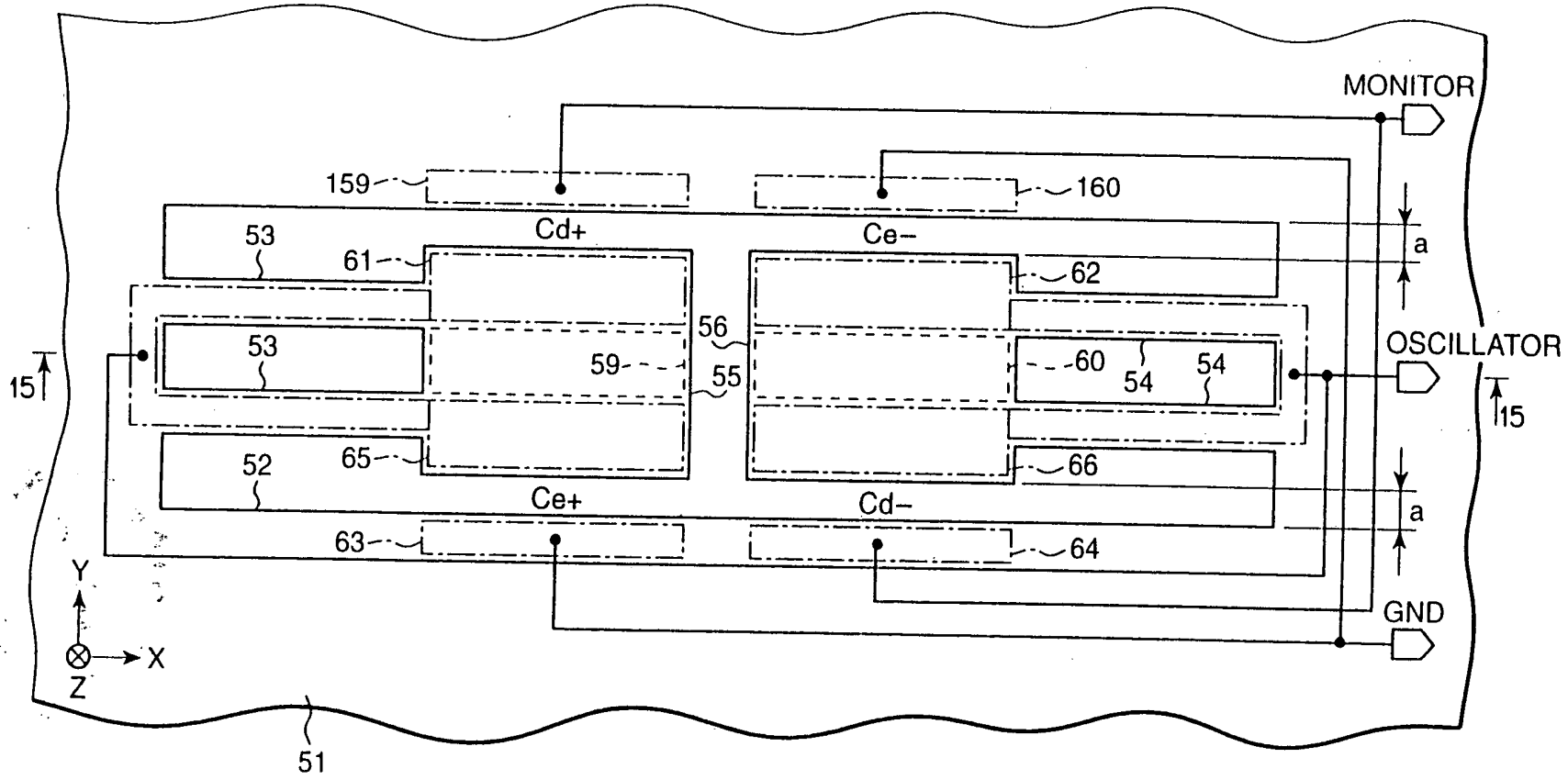

MONITOR
159
160
53
Cd+
61
Ce−
62
a
56
53
59
55
60
54
54
OSCILLATOR
15
15
52
65
66
Ce+
Cd−
a
63
64
GND
Y
X
Z
51

Fig. 15

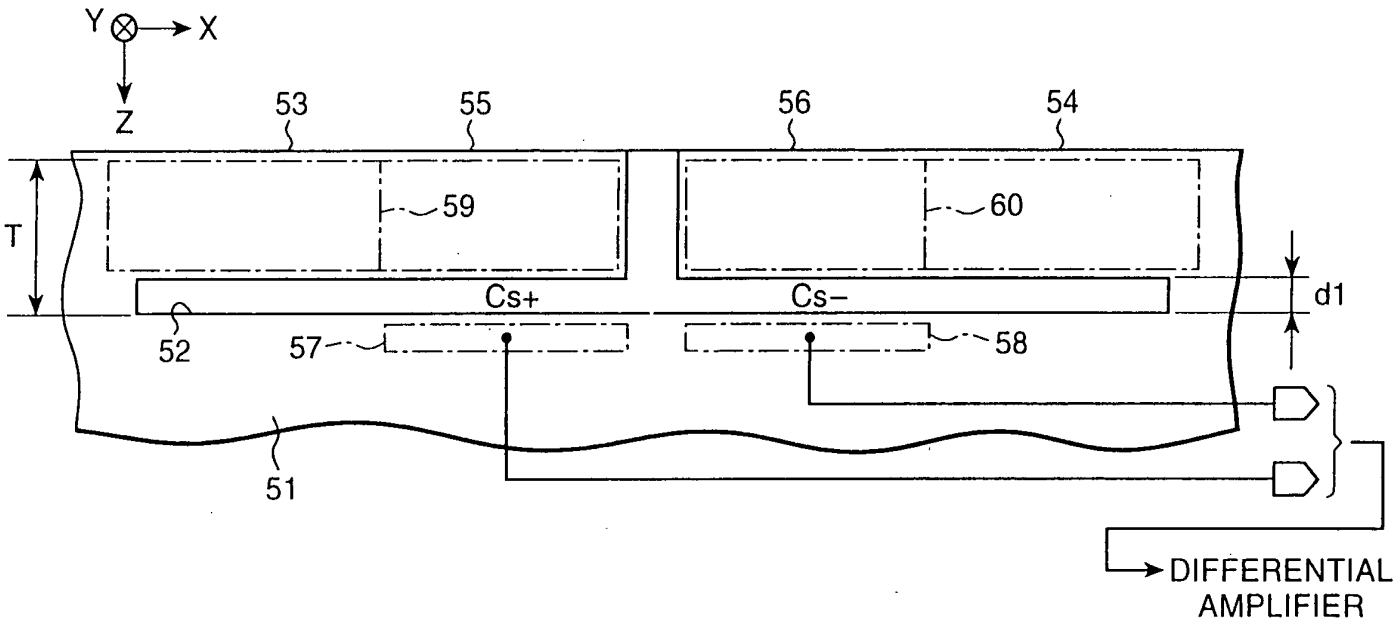

Y
X
Z
53
55
56
54
59
60
T
d1
Cs+
Cs−
52
57
58
51
DIFFERENTIAL AMPLIFIER

Fig. 16

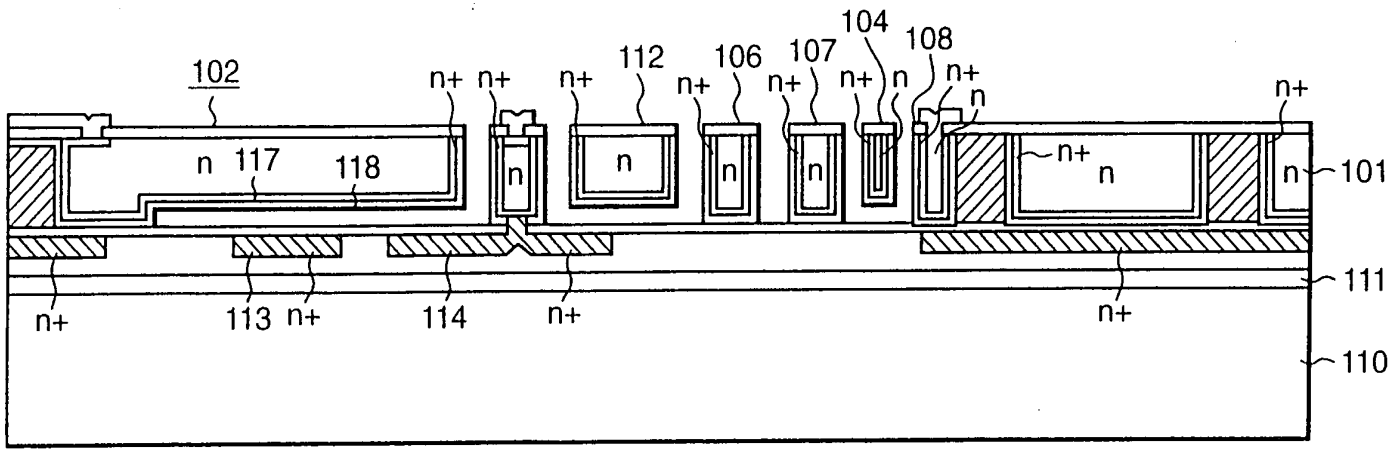

102
n+ n+
n+
112
n+
106
n+
107
n+
104
n
108
n+
n
n+
n
117
118
n
n
n
n
n+
n
n
101
111
n+
113
n+
114
n+
n+
110

Fig. 17

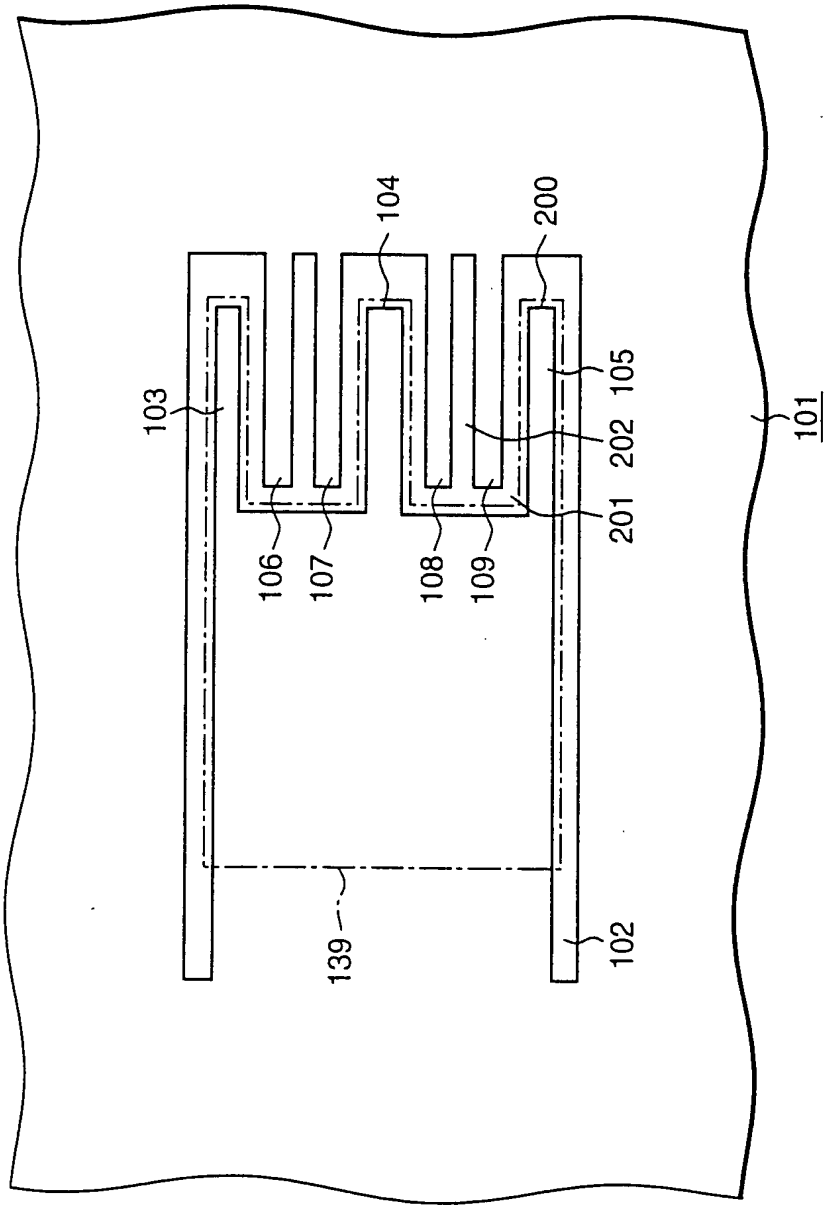
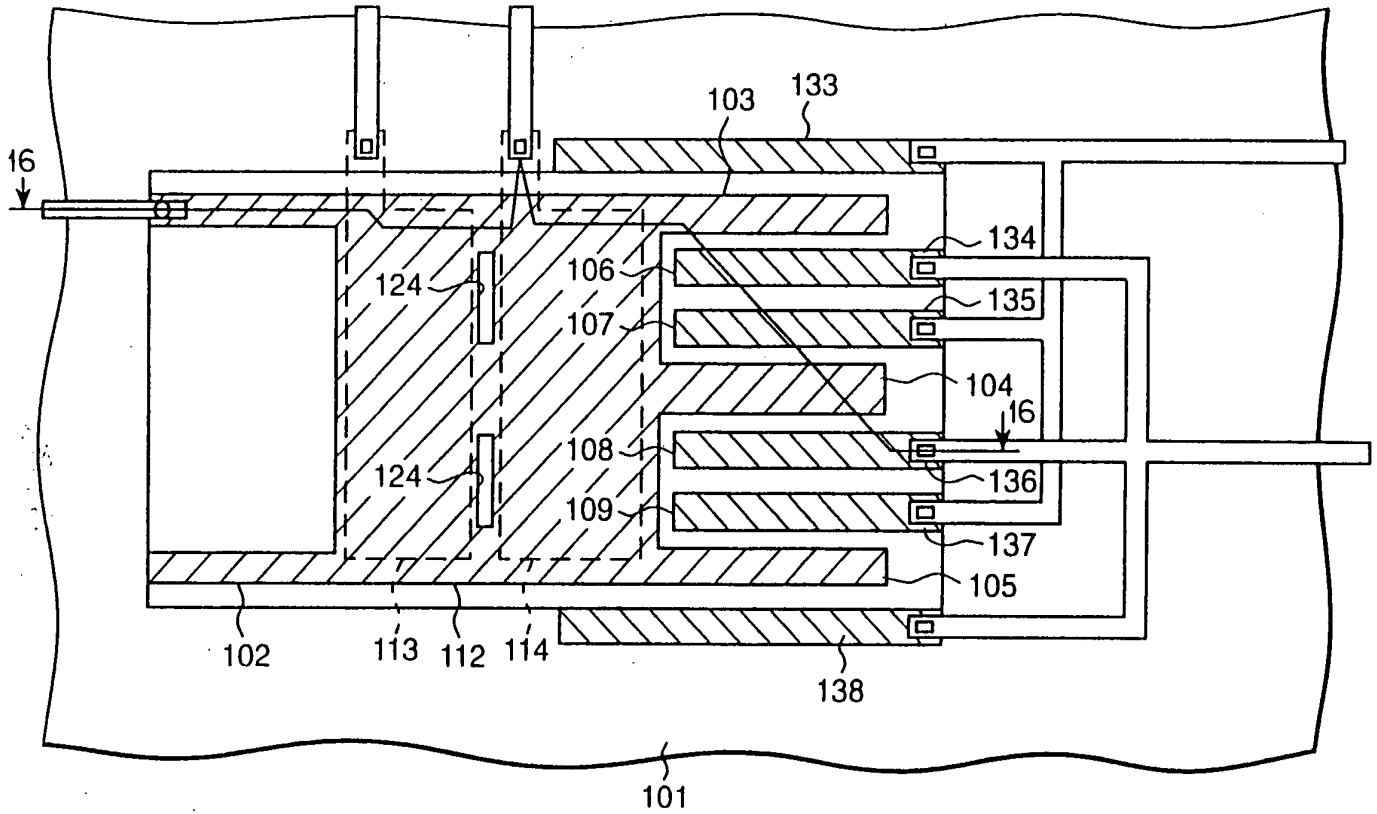


Fig. 18


16
103
133
134
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16
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105
138
106
107
108
109
124
124
102
113
112
114
101

Fig. 19

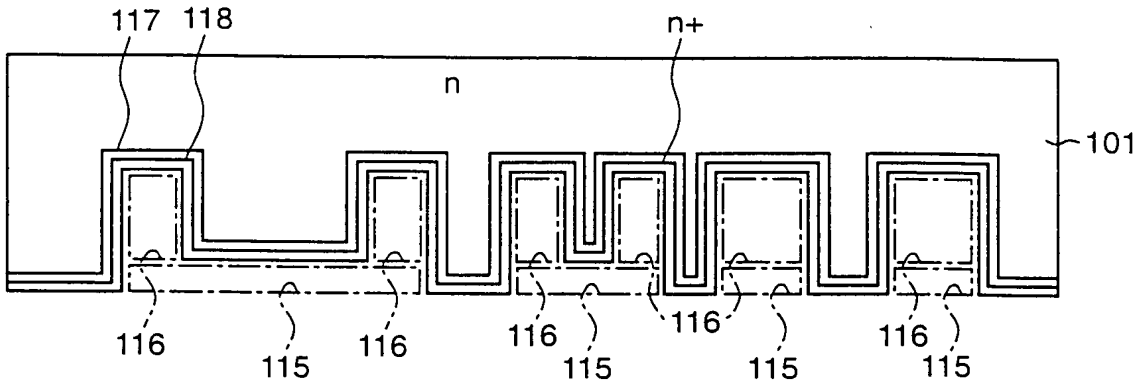


Fig. 20

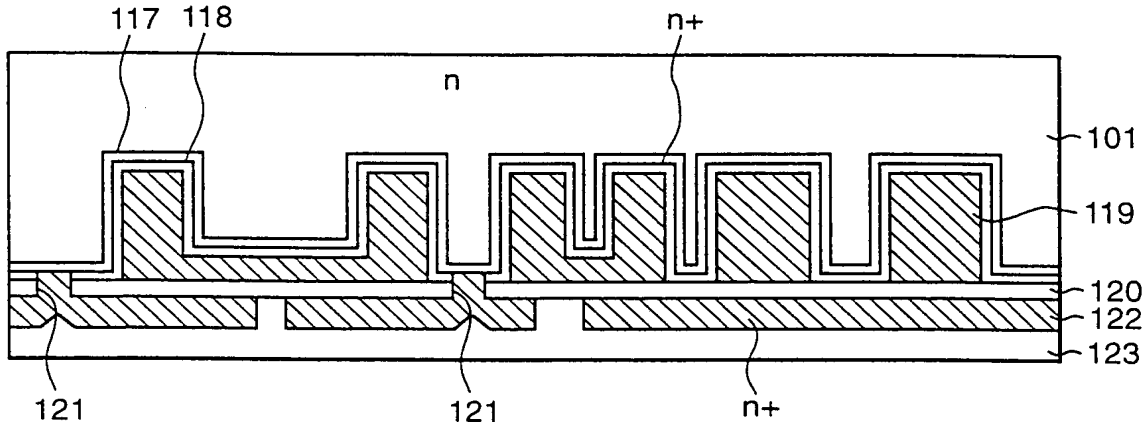


Fig. 21

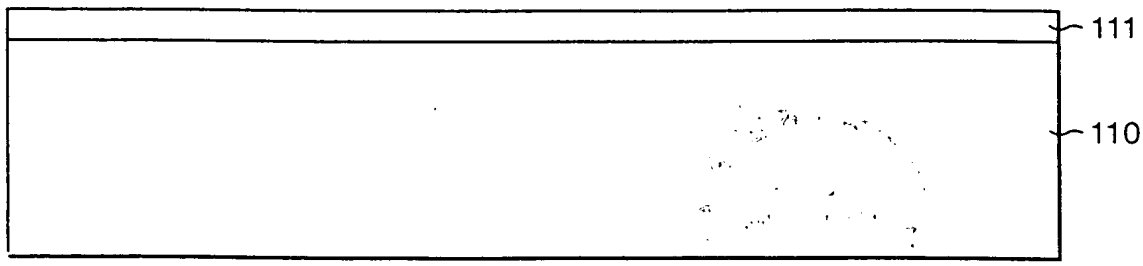


Fig. 22

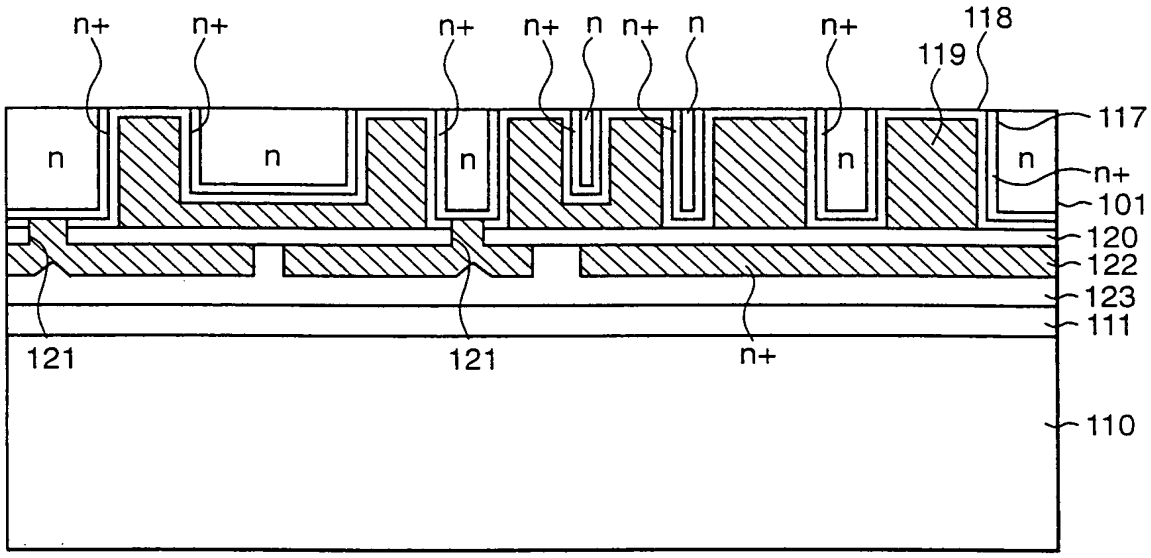
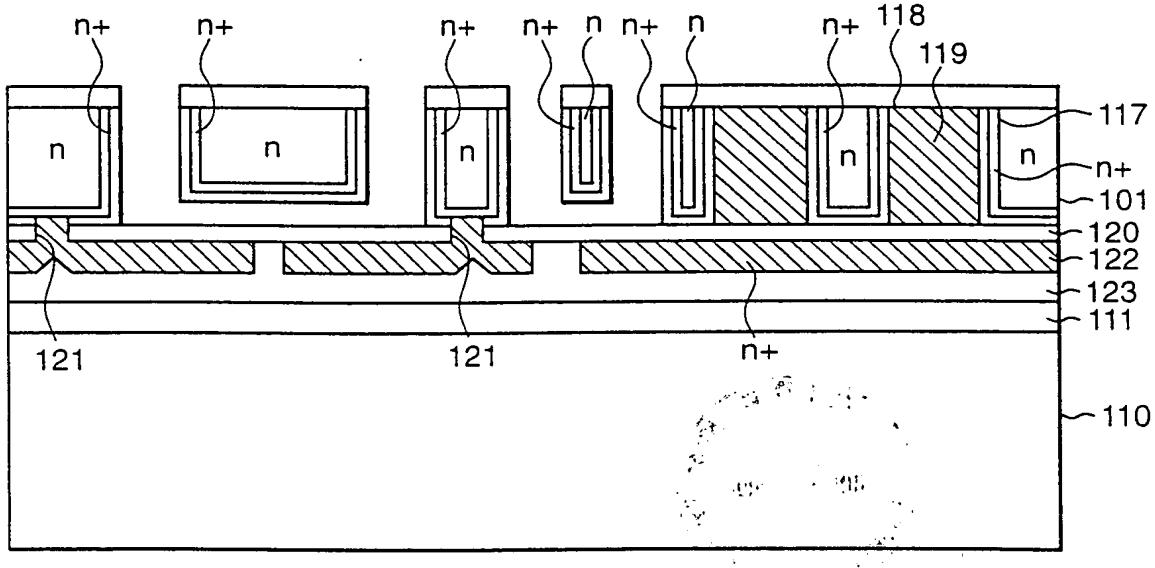

n+
n+
n+
n+
n
n+
n
n+
118
119
117
n
n
n
n
n
n+
101
120
122
123
111
121
121
n+
110

Fig. 23


n+
n+
n+
n+
n
n+
n
n+
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n
n
n+
101
120
122
123
111
121
121
n+
110

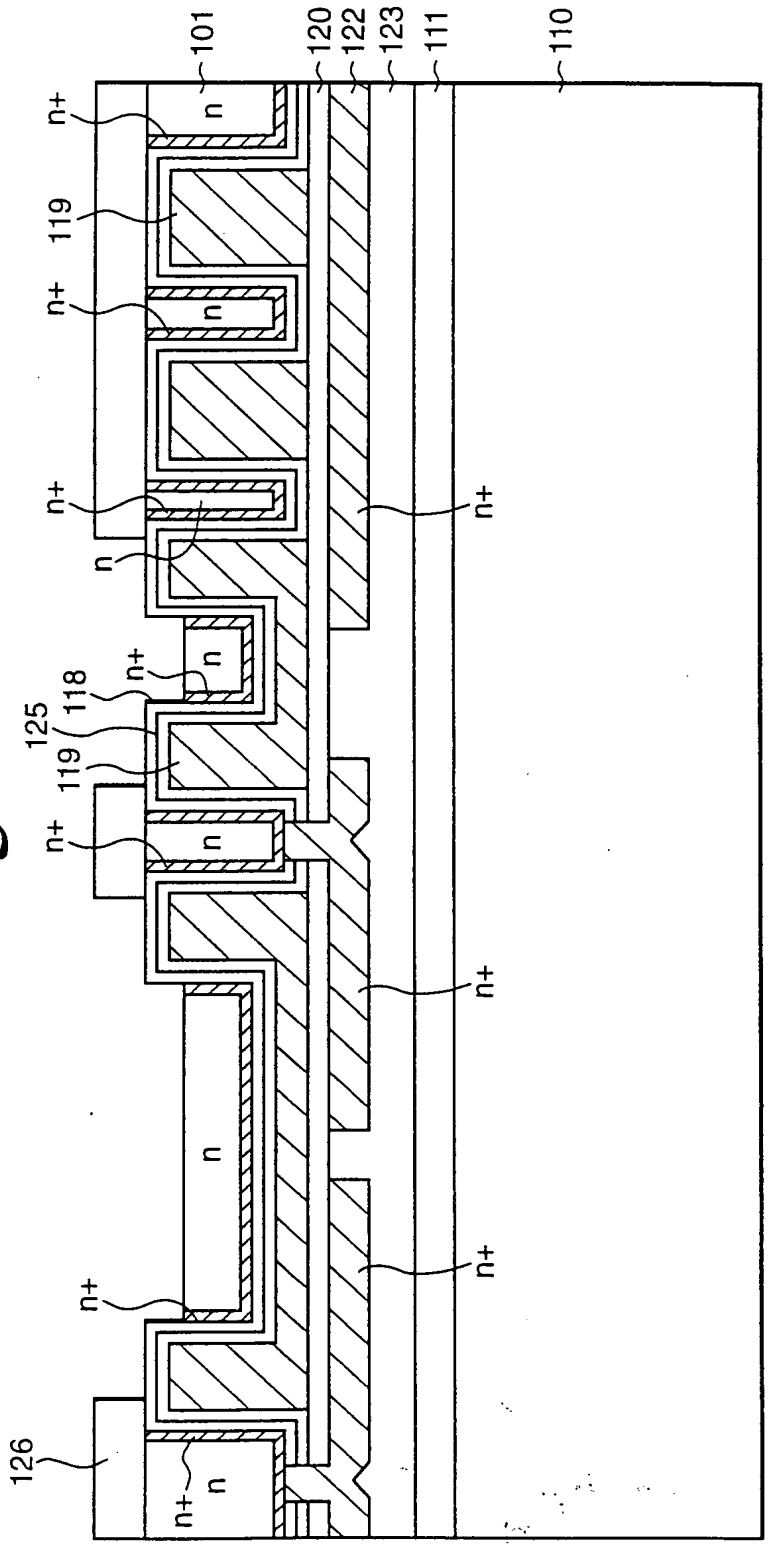


Fig. 24

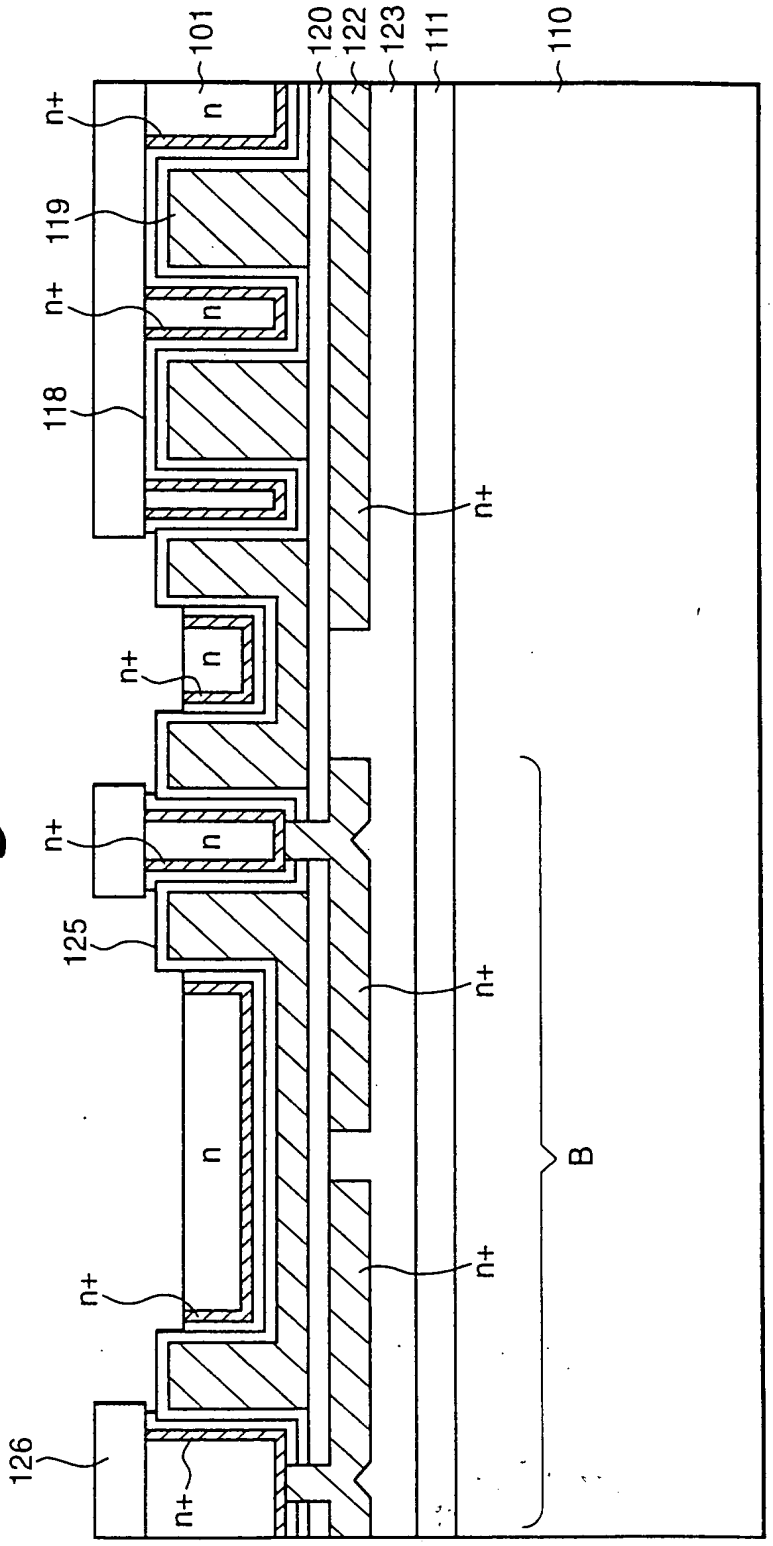


Fig. 25

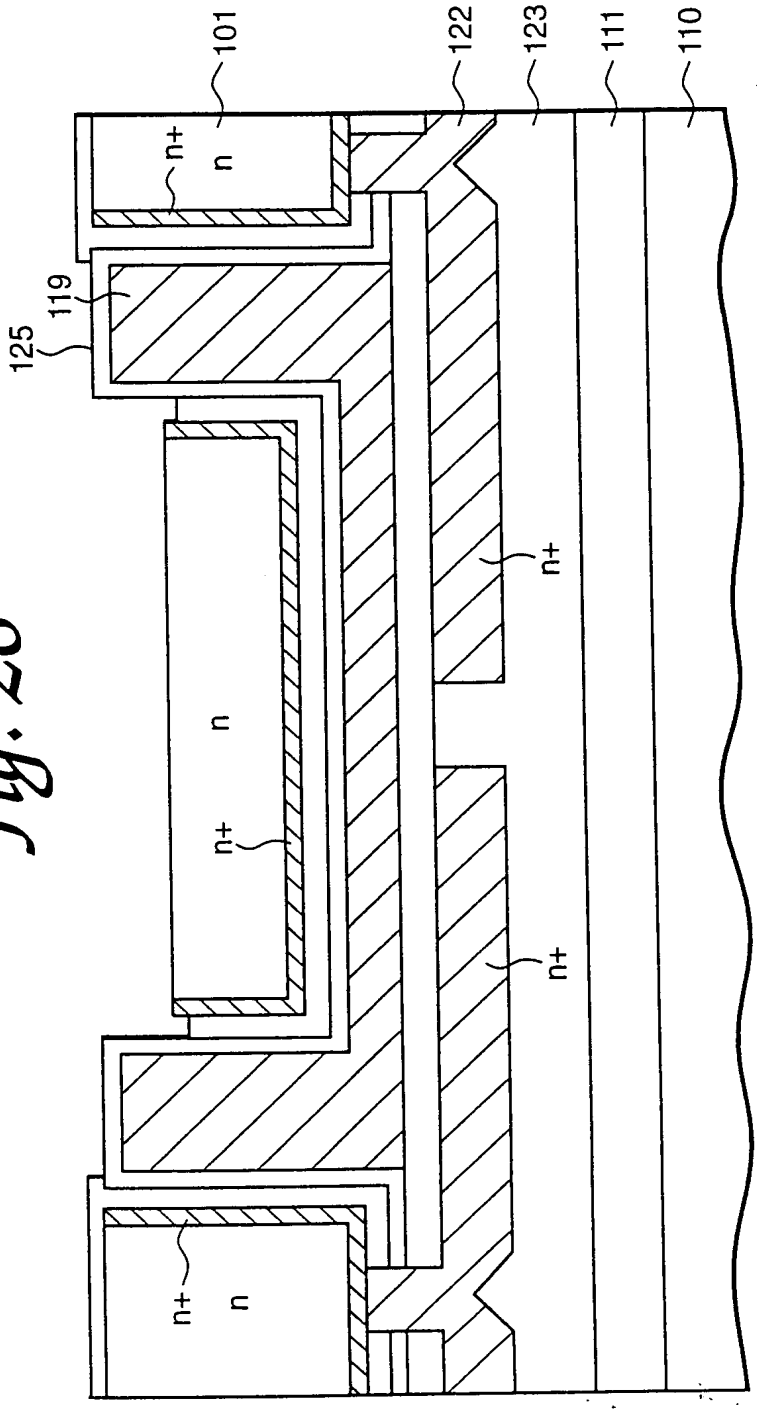


Fig. 26

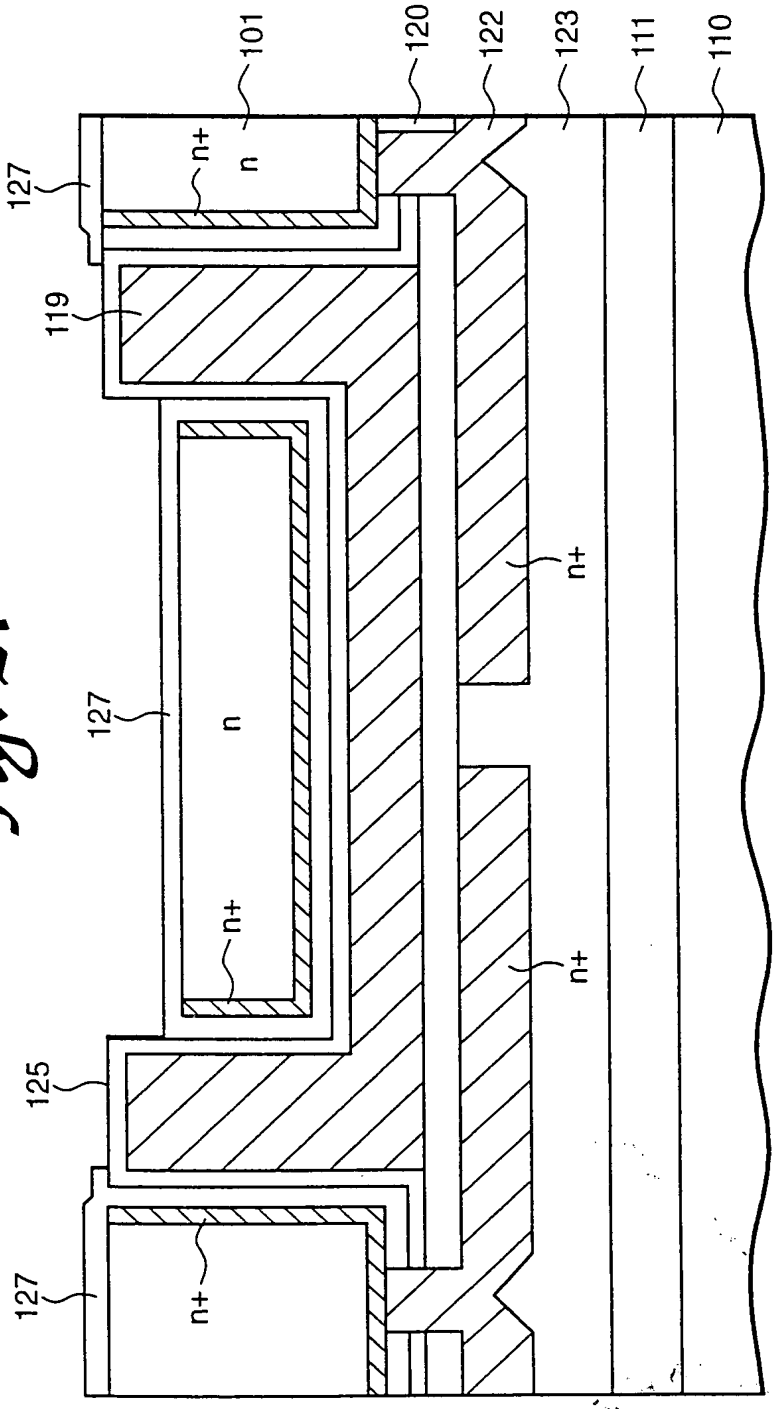


Fig. 27

Fig. 28

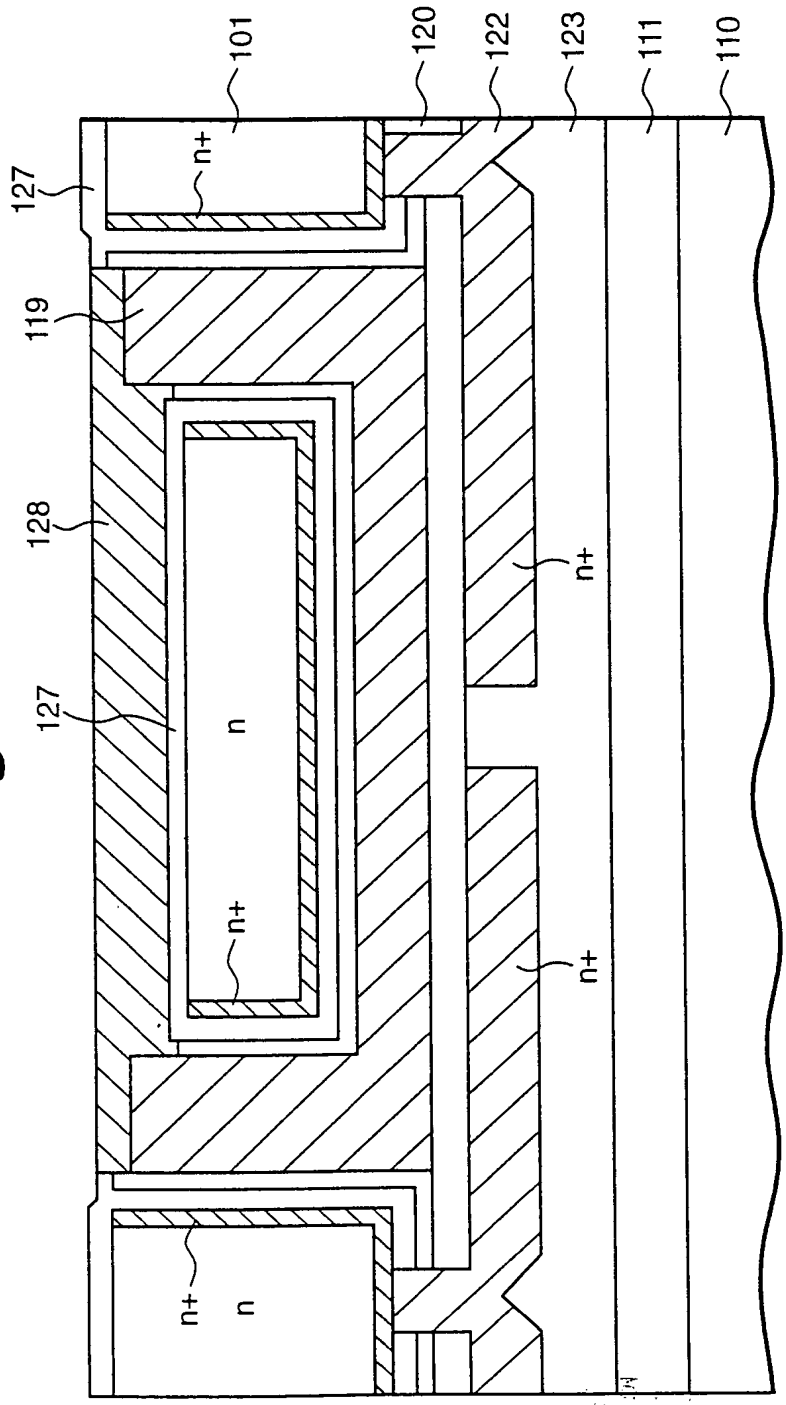
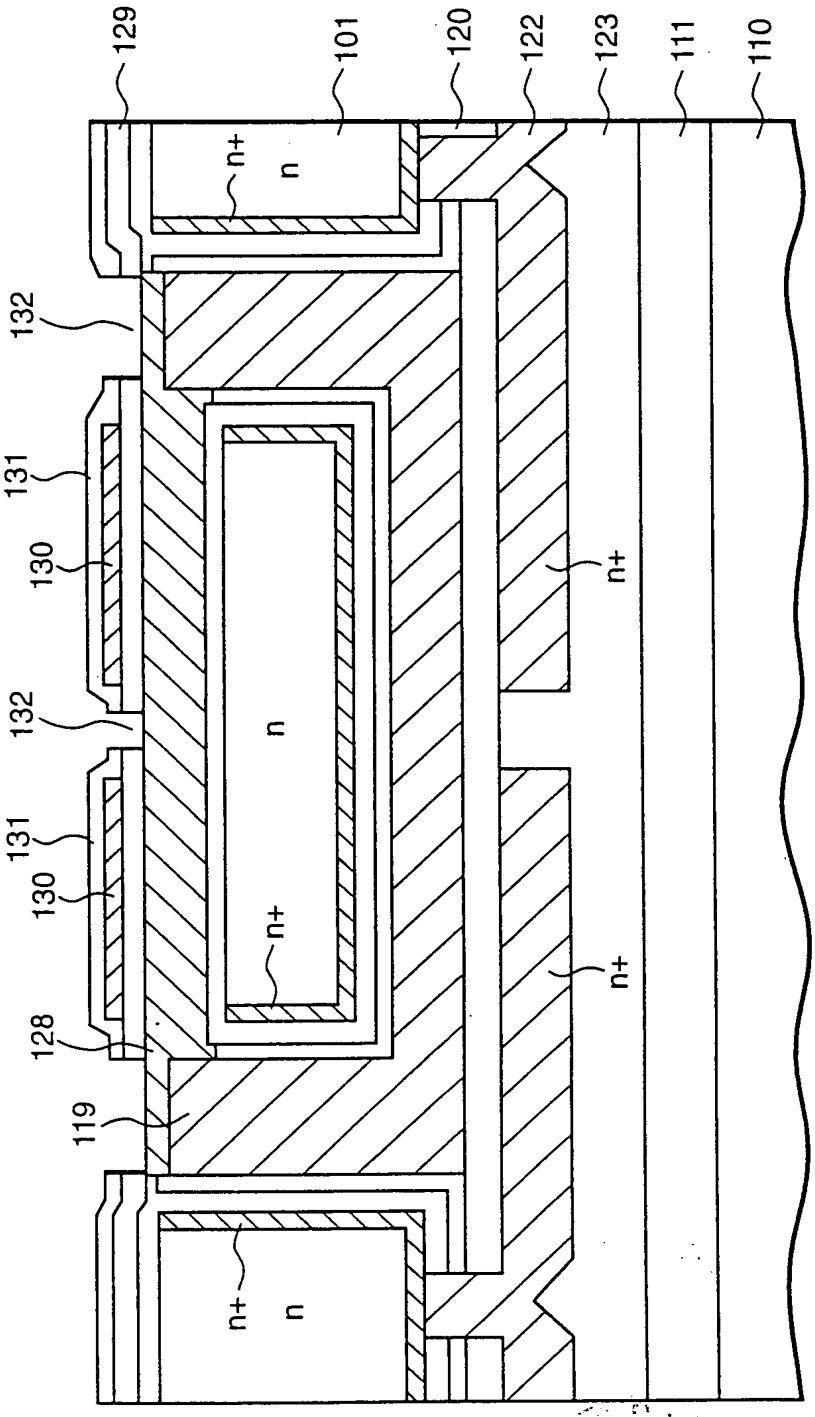


Fig. 29


129
101
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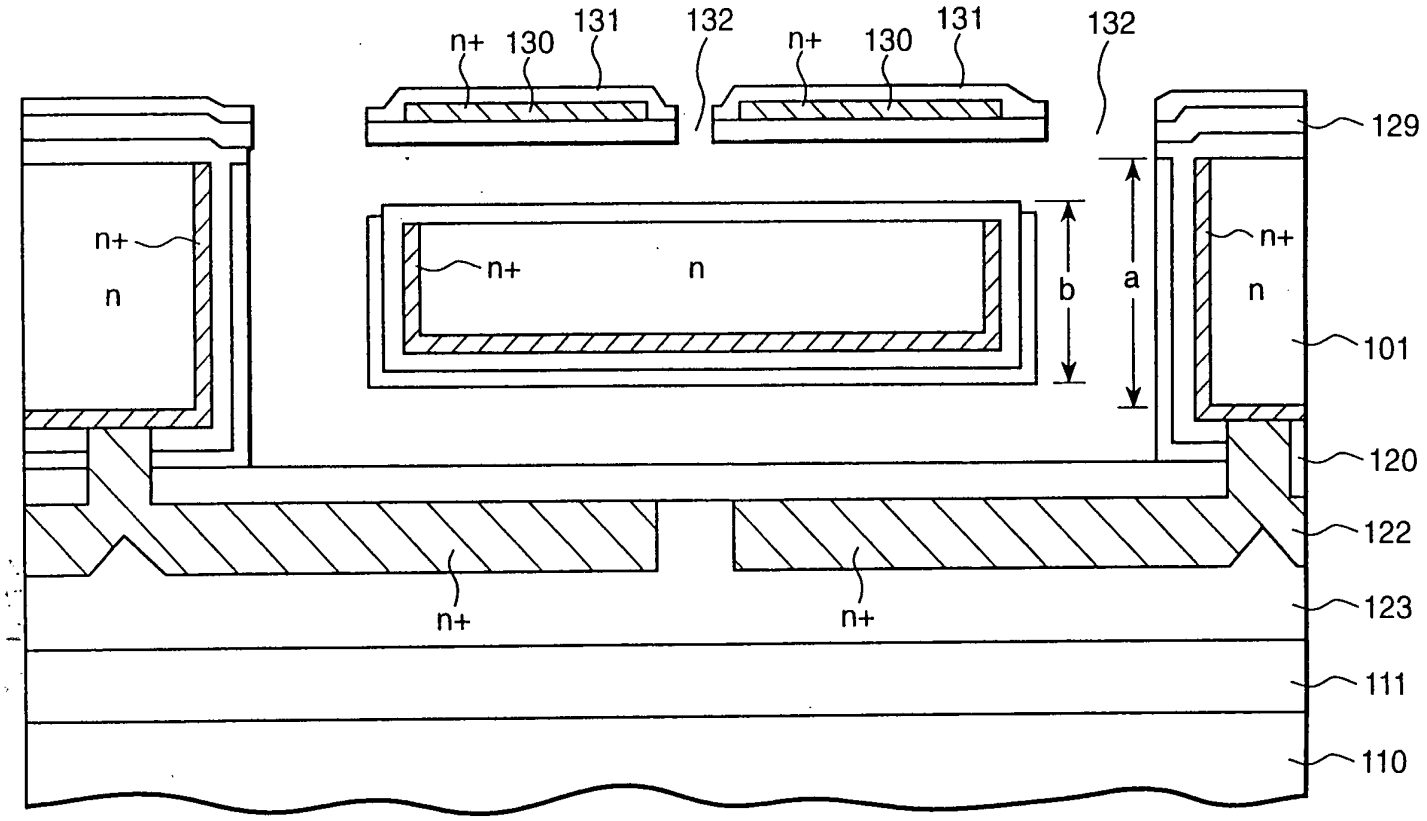
111
110
132
131
130
132
131
130
128
119
n+
n
n+
n
n+
n+
n+
n

Fig. 30


n+
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n+
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n+
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n+
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b
a
n+
n
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n+
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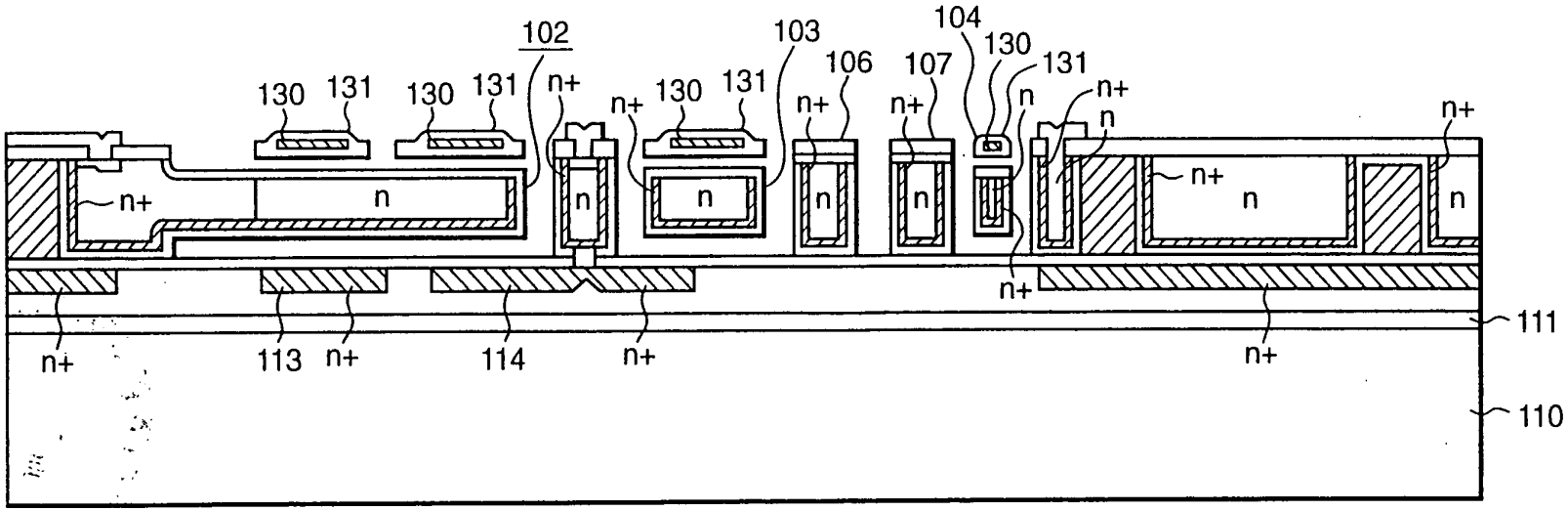
Fig. 31